

REMARKS

Reconsideration of the pending application is respectfully requested on the basis of the following particulars:

Objection to the drawings

The examiner has objected to the drawings as failing to show every feature of the invention specified in the claims. In particular, the examiner asserts that “the features, ‘a standalone manner’ and ‘a transparent structure’ of claim 13 and ‘some intermediate pixels (222), which are spaced apart less further than desired, are ignored for use’ of claim 21, should be shown or the features canceled from the claim(s).”

This objection is respectfully traversed. Applicant respectfully submits that the features identified by the examiner are sufficiently shown in the originally filed figures.

With respect to the features “a standalone manner” and “a transparent structure” of claim 13, the examiner is referred to pages 5 and 22 of the specification, and to Fig. 2. At page 5 of the present application, the transparent structure resulting from spacing apart of the modules is discussed, noting that “such a transparent display structure is useful, for example, as installed on the side of a building, where it is not desirable to obstruct windows [...].”

The claimed subject matter is described again at page 22, where it is stated that “[...] modules 220 of each control unit 116, of LED display system 100 may be arranged sufficiently far apart to have the appearance of being a transparent structure, where each module 220 is mounted physically in a standalone manner, with only an electrical connection to the overall display 114.”

Referring to Fig. 2, the modules 220 are clearly shown as independent (or standalone) boxes of the block diagram, spaced apart, and connected to one another as described with only an electrical connection.

A person skilled in the art would recognize that the apparent transparent structure is achieved by the spacing between the modules 220, as described in the specification and clearly indicated in Fig. 2.

Accordingly, it is respectfully submitted that these features, set forth in claim 13, are clearly illustrated by Fig. 2.

With respect to the feature “some intermediate pixels (222), which are spaced apart less further than desired, are ignored for use” of claim 21, the examiner is referred to pages 12 and 13 of the specification, and to Fig. 2. As described in the specification, “an image may be ‘stretched’ by simply *skipping one or more physical modules 220* within display 113 in a linear fashion.” (emphasis added). Since the physical modules 220 comprise pixels 222, it is readily understood that some intermediate pixels (pixels between other pixels) are accordingly skipped, or ignored for use. Referring to Fig. 2, pixels 222 are clearly shown, and it can be recognized that any given pixel is “intermediate” to other pixels. Accordingly, it is respectfully submitted that these features, set forth in claim 21, are clearly illustrated by Fig. 2.

Therefore, withdrawal of these objections is requested.

Objections to the specification

The examiner has objected to the title of the invention as not descriptive. The title has been amended to read “A CONFIGURABLE LARGE-AREA DISPLAY SYSTEM”. In view of the amended title, withdrawal of this objection is requested.

Claim objections

Claims 1, 2, and 13 are objected to for certain informalities. In particular, the examiner notes that 1) in claim 1, “(122)” in line 10 should be changed to --(222)--; 2) in claim 2 --said-- should be inserted immediately before “central” in line 2; and 3) in claim 13, “structures” in line 3 should be changed to --structure--.

Claims 1, 2, and 13 have been amended according to the examiner’s suggestions. Accordingly, withdrawal of the objections is requested.

Rejection of claims 6, 16, 20, and 21 under 35 U.S.C. § 112, first paragraph

Claims 6, 16, 20, and 21 presently stand rejected as failing to comply with the enablement requirement. In particular, the examiner notes that, while these claims contain the feature “**the EEPROM (224)** contains production data factory light measurements [...],” the “disclosure expressly discloses an EEPROM (224) [...] for storing the hardware configuration and the spacing of the picture elements” and “**another EEPROM** included in each module 220, for storing production data light output measurements [...].”

This rejection is respectfully traversed for the following reasons. The claims have been amended to remove reference numbers, thus obviating any confusion in the claims between “EEPROM (224)” and “another EEPROM” as described in the specification. It is respectfully submitted that a person skilled in the art would understand that a memory such as an EEPROM could readily be implemented by a single component or multiple components. While the specification describes one embodiment using “EEPROM (224) and “another EEPROM,” a person skilled in the art would recognize that alternate arrangements, within the scope of the claims may be employed in the arrangement of an EEPROM. Therefore, it is respectfully submitted that the claimed subject matter is clearly enabled since a person skilled in the art would be able to make and/or use the invention according to the description of the EEPROM provided.

The examiner also notes that claims 20 and 21 contain a feature “the picture elements (222) which was not described in the specification [...].” As noted above, the claims have been amended to remove the reference numbers. Further, claim 20 has been amended to recite “pixels” instead of “picture elements,” and claims 20 and 21 have been further amended in the interest of improved form and antecedent basis.

In view of the amendments made, and the above remarks, withdrawal of the rejection is respectfully requested.

Rejection of claims 13, 20, and 21 under 35 U.S.C. § 112, second paragraph

Claims 13, 20, and 21 presently stand rejected as being indefinite. In particular, the examiner states that, in claim 13, it is not clear what the applicant means by “the

modules (220) of the display are arranged in a standalone manner so that the display (114) apparently has a transparent structure.” Also, the examiner states that, in claim 21, it is not clear what applicant means by “depending on the desired spacing, some intermediate pixels (222), which are spaced apart less further than desired, are ignored for use.”

It is respectfully submitted that the subject matter of claims 13 and 21 are clearly described in the specification at pages 5 and 22, and illustrated in Fig. 2, as described above. Accordingly, the claims are sufficiently definite to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The examiner further notes that claims 20 and 21 include terms lacking antecedent basis. These claims have been amended to correct the lacking antecedent basis.

In view of the amendments and the above remarks, withdrawal of the rejection is respectfully requested.

Rejection of claims 1, 2, 11-14, 18, and 19 under 35 U.S.C. § 102(b)

Claims 1, 2, 11-14, 18, and 19 presently stand rejected as being anticipated by Maskeny (U.S. 5,990,802), and claims 1, 11-14, and 19 presently stand rejected as being anticipated by Holloman (U.S. 4,682,162). These rejections are respectfully traversed for at least the following reasons.

According to the present invention, a display system comprises a plurality of sub-displays each containing an array of pixels. Each sub-display displays a part of an image. A central controller hardware and software block controls the display system and generates control data and video signals to be displayed on the display, the control data and video signals being converted to a digital signal compatible with the display. The control data and video signals are passed from one sub-display to the next, wherein each sub-display is a control unit capable of controlling its own individual pixels as a function of its position within the display, and of the received control data and video signals.

According to the present invention, the entire original image is sent to all sub-displays and each sub-display extracts the part of the entire image that is relevant to the

sub-display. This is reflected in claim 1 in that “a central controller hardware and software block [...] generates ***control data and video signals to be displayed,***” and “the digitized ***control data and video signals are passed*** from one sub-display to the next,” wherein “each sub-display is [...] capable of controlling [its] pixels [...] as a function of its position within the display and of the received control data and video signals.”

As a result, each sub-display (or display tile) may be assigned a physical location within a display (such as a position within a display composed of a 7x5 arrangement of sub-displays) during a configuration process. Such a configuration may be defined, for example, on a PC which is connected to the display. During start-up of the display, the PC communicates with each sub-display to provide each sub-display with its position, such that each sub-display knows its own position.

Since each sub-display knows its own position, a sub-display, upon receipt of the entire image, is able to extract from the entire image the portion of the image that is relevant to the sub-display’s position and dimensions. Upon extraction of the relevant portion of the entire image by the sub-display, the sub-display then performs its own scaling based on the physical resolution of the display and sub-display, and the image portion of the sub-display is displayed.

Turning to the rejection in view of Maskeny, Maskeny fails to disclose or suggest such a display wherein an entire image is sent to all sub-displays, and each sub-display extracts and displays a relevant portion of the image based on its position.

Instead, Maskeny teaches that a controller (such as a PC) creates a separate data packet for each sub-display (panel). Each data packet contains an address specifying for which panel the packet is intended (see *Maskeny*; col. 9, lines 12-15). Thus, each panel does not receive an entire image, but only its own portion. Further, each panel cannot be said to be capable of controlling its pixels ***as a function of its position*** within the display and of the received control data and video signals, since the panel displays information only according to receipt of a data packet specifically addressed according to the panel’s serial number. The panel is unaware of its own actual physical position within the display.

Each of plural panels in a display, according to Maskeny, has a unique serial number (see *Maskeny*; col. 2, lines 56-64), which is used as the panel's address. When a tile needs to be replaced, there is a need to reconfigure the controller so that the controller knows the new serial number of the replacement panel (see *Maskeny*; col. 7, lines 26-31).

In contrast, according to the present invention, since each sub-display receives data for entire image, and each tile is assigned its position during start-up by a central controller, there is no need for reconfiguration when a sub-display is replaced. As soon as the new sub-display is powered on, it communicates with the controller and is assigned its physical position. Accordingly, no manual intervention is required. This presents a significant advantage over Maskeny, wherein a manual intervention is necessary to accommodate a new panel with a new, unique serial number.

It is respectfully submitted that, for at least these reasons, Maskeny does not anticipate claim 1 of the present application, since Maskeny fails to disclose or suggest a display as claimed wherein a central controller hardware and software block generates control data and video signals to be displayed, and the digitized control data and video signals are passed from one sub-display to the next, wherein each sub-display is capable of controlling its pixels as a function of its position within the display and of the received control data and video signals. Therefore, it is respectfully submitted that claim 1, and claims 2-21 which depend from claim 1, are allowable over the cited reference and withdrawal of the rejection is respectfully requested.

Turning now to the rejection in view of Holloman, Holloman fails to disclose or suggest such a display wherein an entire image is sent to all sub-displays, and each sub-display extracts and displays a relevant portion of the image based on its position.

Holloman discloses a display unit comprising a plurality of boards. Each board includes a number of display elements such as LEDs. The boards and display elements are arranged in a two dimensional array. The display elements are selectively activated to generate a message which can be moved vertically or laterally across the array. A

memory element is provided to activate each display element. (see *Holloman*; abstract; col. 2, lines 33-37).

Holloman fails to disclose or suggest a sub-display that includes a control unit capable of controlling its individual pixels as a function of its position within the display and of the received control data and video signals.

Holloman teaches that a display element (in general a LED) is activated whenever an ENABLE signal is received on the ENAGLE bus, and when a corresponding latch is also activated by means of a bit received via a signal from the SERIAL IN, directly or shifted from the neighboring latch upstream in the direction of the SERIAL IN connection. (see *Holloman*; fig. 3; col. 3, lines 6-35).

Thus, it is understood that *Holloman* teaches a shifting method, wherein an individual LED is activated according to a signal shifted from a neighboring latch, irrespective of the LED's position. That is, an individual LED will display any signal provided to its associated latch (either turning the LED on or off accordingly). Accordingly, *Holloman* does not provide any teaching or suggestion that any sub-display is intended to, or is capable of, taking into account a relative position within a display panel in controlling individual pixels.

Further, it is clear that a signal sent to an individual board of *Holloman*'s display does not comprise an entire image or message, but only the information required for driving the LEDs of the individual board. Referring to *Holloman*'s Fig. 2, it can be recognized that data is shifted bit-wise from board to board, such that at no time does a board contain any more image (message) information than is to be presently displayed by its own LEDs.

Accordingly, *Holloman* fails to anticipate claim 1 of the present application because *Holloman* fails to disclose or suggest each and every element set forth in claim 1. Therefore, it is respectfully submitted that claim 1, and claims 2-21 which depend from claim 1, are allowable over the cited reference and withdrawal of the rejection is respectfully requested.

Rejection of claims 3-5, 7-10, and 17 under 35 U.S.C. § 103(a)

Claims 5, 7-10, 15, and 17 presently stand rejected as being unpatentable over Maskeny, and claims 3 and 4 are rejected as being unpatentable over Maskeny in view of additionally cited references.

It is respectfully submitted that, as discussed above, Maskeny fails to disclose or suggest each and every element set forth in claim 1 of the present application. Accordingly, claims 5, 7-10, 15, and 17 are allowable over Maskeny at least due to their dependency from claim 1. Further, it is respectfully submitted that the additionally cited references fail to supplement the shortcomings of Maskeny, and therefore claims 3 and 4 are allowable over the cited references at least due to their dependency from claim 1. Accordingly, withdrawal of these rejections is respectfully requested.

Double patenting rejection

Claims 14-16 and 19 presently stand provisionally rejected as on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 1, 3, 5, and 10 of co-pending application 10/691,635. This rejection is respectfully traversed for the following reasons.

Claim 14 has been amended to depend from claim 1. Therefore, it is respectfully submitted that claims 14-16 and 19 are allowable for at least the same reasons as claim 1. Accordingly, withdrawal of the rejection is requested.

Conclusion

In view of the amendments to the claims, and in further view of the foregoing remarks, it is respectfully submitted that the application is in condition for allowance. Accordingly, it is requested that claims 1-21 be allowed and the application be passed to issue.

Application No.: 10/697,096
Examiner: Jimmy Nguyen
Art Unit: 2629

If any issues remain that may be resolved by a telephone or facsimile communication with the Applicant's attorney, the Examiner is invited to contact the undersigned at the numbers shown.

Respectfully submitted,

BACON & THOMAS, PLLC
625 Slaters Lane, Fourth Floor
Alexandria, Virginia 22314-1176
Phone: (703) 683-0500

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JOHN R. SCHAEFER
Attorney for Applicant
Registration No. 47,921